IN THE CLAIMS:

1. (Previously Presented) A robust scalable laser system comprising:

a plurality of laser fibers;

a high-power laser pump source coupled to each of said laser fibers; and

an external cavity having an optical axis, and beam-flattening optics, said external cavity having a first lens, a single aperture, a second lens and a mirror located along the optical axis, said single aperture being of predetermined diameter and being located at focal points of the first and the second lenses.

2. (Currently Amended) The laser system of Claim 1 wherein said ~~plurality of laser fibers are~~ laser system outputs an eye-safe laser ~~fibers~~ beam.

3. (Previously Presented) The laser system of Claim 2 wherein said laser fibers include double-clad Er:YAG laser resonators.

4. (Canceled)

5. (Previously Presented) The laser system of Claim 1 wherein each of said high-power laser pump sources include a laser diode.

6. (Previously Presented) The laser system of Claim 1 wherein said pump sources are end-coupled via pigtails or discrete imaging optics.

7. (Previously Presented) The laser system of Claim 1 wherein said pump sources are side coupled, edge coupled, fusion coupled, and/or coupled via a reflective cavity.

8. (Previously Presented) The laser system of Claim 1 wherein laser fibers with differing lengths differ in length from one another by more than 1.5 centimeters.

9. (Canceled)

10. (Withdrawn) The laser system of Claim 8 wherein said cavity incorporates a diffractive mode feedback selector.

11. (Withdrawn) The laser system of Claim 8 wherein said cavity incorporates a free space propagation distance.

12. (Canceled)

13. (Withdrawn) An eye-safe laser system comprising:

plural fiber laser resonators adapted to lase at eye-safe wavelengths;

a high-power laser pump source coupled to each of said fiber laser resonators; and

beam-flattening optics, a solid light pipe of non-imaging optic and a mirror, said light pipe having a length approximately equal to a diameter of a combined beam output from the beam-flattening optics, squared, divided by the beam wavelength.

Claims 14 – 15 (Canceled)

16. (Previously Presented) The laser system of Claim 1 wherein said laser fibers include integrated reflectors.

17. (Original) The laser system of Claim 16 wherein said integrated reflectors include distributed Bragg reflectors.

Claims 18 – 19 (Canceled)

20. (Previously Presented) The laser system of Claim 17 wherein said beam-flattening optics are characterized by hexagonal geometry.

21. (Original) The laser system of Claim 20 wherein said plural pump sources include diodes.

22. (Previously Presented) The laser system of Claim 21 wherein said laser fibers are Er:YAG laser fibers.

23. (Previously Presented) The laser system of Claim 22 wherein said laser fibers include cores that are sufficiently different in length to facilitate longitudinal mode overlap among beams traveling along different cores.

24. (Previously Presented) The laser system of Claim 21 wherein said plural pump sources include a diode emitter array for each of said plurality of laser fibers.

25. (Canceled)

26. (Previously Presented) The laser system of Claim 24 further including a clad end-pumping configuration for coupling each diode emitter array to a corresponding laser fiber.

27. (Previously Presented) The laser system of Claim 26 wherein said clad end-pumping configuration includes discrete imaging optics for imaging output beams from each diode emitter array into each laser fiber.

28. (Original) The laser system of Claim 24 wherein said diode emitter array is adapted to transmit at wavelengths of approximately 1.5 microns.

29. (Previously Presented) A beam phase-locking system comprising:

first means for receiving plural single-mode beams of electromagnetic energy and providing flat-top beams as output in response thereto; and

second means for combining said flat-top beams via spatial filtering and providing a collimated combined beam in response thereto, said first means including multiple fiber laser oscillators having integrated Bragg grating mirrors, said integrated Bragg grating mirrors representing a first end of a spatial filter included in said second means, and said spatial filter including beam flattening optics, a collimating lens pair having a first collimating lens and a second collimating lens and a single aperture of predetermined diameter therebetween, and a mirror, the aperture being located at the focal points of the first and the second collimating lenses.

30. (Canceled)

31. (Previously Presented) The system of Claim 29 wherein said fiber laser oscillators include Er-doped YAG crystal (Er:YAG) resonator cores.

32. (Original) The system of Claim 31 wherein said fiber laser oscillators further include dielectric cladding at least partially surrounding said resonator cores.

33. (Original) The system of Claim 32 wherein said resonator cores are approximately equivalent lengths.

34. (Previously Presented) The system of Claim 32 wherein different length resonator cores are sufficiently different in length to facilitate longitudinal mode overlap among beams traveling along different resonator cores.

35. (Currently Amended) The system of Claim 34 wherein said resonator cores of different lengths differ in length from one another by more than 1.5 centimeters.

36. (Original) The system of Claim 31 wherein said Er:YAG resonator cores include YAG crystal doped with less than 0.5% Er molecular concentration.

37. (Original) The system of Claim 31 further including means for pumping said fiber laser oscillators.

38. (Original) The system of Claim 37 wherein said means for pumping includes plural diode emitters.

39. (Original) The system of Claim 38 wherein said means for pumping includes one or more pigtail couplers for coupling one or more diode emitters into each fiber laser oscillator.

40. (Original) The system of Claim 37 wherein said means for pumping includes discrete imaging optics for coupling one or more diode emitters into each fiber laser oscillator.

Claims 41 – 42 (Canceled)

43. (Previously Presented) The system of Claim 29 wherein said mirror is positioned adjacent to the second collimating lens and at a second end of said spatial filter, said mirror being partially transmissive.

44. (Previously Presented) The system of Claim 43 wherein said first means includes beam-flattening optics positioned between said Bragg grating mirrors and said first collimating lens.

45. (Original) The system of Claim 44 wherein said beam-flattening optics are characterized by hexagonal geometry.

46. (Previously Presented) An eye-safe laser system comprising:

plural Er:YAG fiber laser resonators;

plural high power laser pump sources coupled to said plural Er:YAG fiber laser resonators to pump said plural Er:YAG fiber laser resonators; and

a spatial filter coupled to said plural Er:YAG fiber laser resonators and adapted to phase lock outputs of said fiber laser resonators to produce a single collimated combined laser beam as output in response thereto.

47. (Previously Presented) The laser system of Claim 46 wherein said spatial filter includes first means for receiving plural single-mode beams of electromagnetic energy output from said plural Er:YAG fiber laser resonators and providing flat-top beams as output in response thereto and second means for combining said flat-top beams via spatial filtering to provide said collimated combined laser beam in response thereto.

48. (Previously Presented) The laser system of Claim 47 wherein various of said plural Er:YAG fiber laser resonators differ in length from one another by more than 1.5 centimeters.

49. (Original) The laser system of Claim 48 wherein said first means includes beam-combining optics characterized by hexagonal geometry.

50. (Original) The laser system of Claim 49 wherein said spatial filter includes means for rejecting higher order beam modes arising from combining said flat top beams.

51. (Original) The laser system of Claim 50 wherein said spatial filter further includes means for reflecting a first portion of collimated energy back through an aperture between two collimating lenses and transmitting a second portion of collimated energy as output of said system.

52. (Currently Amended) An efficient multicore fiber laser comprising:

a plurality of high power laser pump sources that provide input electromagnetic energy; ~~and~~

laser resonator cores coupled to said plural pump sources and arranged to directly receive said input electromagnetic energy and provide laser energy in response thereto, said laser resonator cores comprising Er:YAG crystal; and

a container accommodating said resonator cores, said container internally reflecting said input electromagnetic energy to facilitate coupling of said input electromagnetic energy with said laser resonator cores.

53. (Original) The laser system of Claim 52 wherein said laser resonator cores are optically side coupled, edge coupled, fusion coupled, and/or prism coupled to said plural pump sources.

54. (Canceled)

55. (Original) The laser system of Claim 54 wherein said container is a substantially flat disk or plate designed for total internal reflection of laser energy.

56. (Withdrawn) The laser system of Claim 54 wherein said container is spherical or cylindrical.

57. (Previously Presented) A method for generating an eye-safe laser beam comprising the steps of:

pumping a plurality of fiber laser resonators with high power laser pump sources so that said resonators lase at eye-safe wavelengths;

passing output beams from said fiber laser resonators through beam-flattening optics;

passing the output beams from the beam-flattening optics through a first lens in an external cavity;

passing output from the first lens through a single aperture located at about the focal point of the first lens;

passing output from the aperture through a second lens;

passing output from the second lens to a mirror;

reflecting the output from the second lens back through the second lens;

passing the reflected output from the second lens through the single aperture, the aperture being located about the focal point of the second lens;

passing the reflected output from the single aperture through the first lens;

passing the reflected output from the first lens through the fiber laser resonators; and

reflecting by integrated mirrors in the fiber laser resonators the reflected output passing through the fiber laser resonators.

58. (Canceled)